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☐	L22	l17 and bump same map$ and horizon$ same map and texture same map$	12
☐	L21	l17 and bump same map$ and horizon$ same map and texture same map$ and vector and radial same direction	0
☐	L20	L19 and bump near6 map and horizon$ same map and texture	3
☐	L19	345/586.ccls.	51
☐	L18	345/583.ccls.	24
☐	L17	345/582.ccls.	426
☐	L16	bump near6 map and texture near6 map and horizon$ near8 map	6
☐	L15	L14 and texture same map and color	7
☐	L14	bump same map$ and horizon$ same map$ and radial and direction	8
☐	L13	shadow and bump same map$ and horizon$ same map$ and radial and direction	0
☐	L12	shadow and bump near8 map$ and horizon$ near8 map$ and radial and direction	0
☐	L11	shadow and bump near8 map and horizon$ near8 map and radial and direction	0
☐	L10	real-time and shadow and bump near8 map and horizon$ near8 map and radial and direction	0
☐	L9	real-time and shadow and bump near8 map and horizon$ near8 map and radial same direction	0
☐	L8	real-time same shadow same bump near8 map and horizon$ near8 map and radial same direction	0
☐	L7	L6 and shadow near6 map	0
☐	L6	l4 and horizon$ near10 map and (light or lit)	1
	DB=PGPB,USPT; PLUR=YES; OP=OR		
☐	L5	L4 and bump near6 map and horizon$ near8 map and vector$	2
☐	L4	345/584.ccls.	34
☐	L3	L1 and bump near6 map and surface and horizontal near6 map and texture same map$	1
☐	L2	L1 and bump near6 map and surface and horizontal near6 map and texture same map$ and color and (light or lit)and radial near6 direction and perspective same view and normal same vector	0
☐	L1	345/426.ccls.	511

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☐	L26	l17 and texture and tangent and plane and radial and direction and vector	0
☐	L25	l17 and texture and tangent and plane and radial same direction and vector	0
☐	L24	l17 and texture and tangent same plane and radial same direction and vector	0
☐	L23	l17 and texture same map$ and tangent same plane and radial same direction and vector	0
☐	L22	l17 and bump same map$ and horizon$ same map and texture same map$	12
☐	L21	l17 and bump same map$ and horizon$ same map and texture same map$ and vector and radial same direction	0
☐	L20	L19 and bump near6 map and horizon$ same map and texture	3
☐	L19	345/586.ccls.	51
☐	L18	345/583.ccls.	24
☐	L17	345/582.ccls.	426
☐	L16	bump near6 map and texture near6 map and horizon$ near8 map	6
☐	L15	L14 and texture same map and color	7
☐	L14	bump same map$ and horizon$ same map$ and radial and direction	8
☐	L13	shadow and bump same map$ and horizon$ same map$ and radial and direction	0
☐	L12	shadow and bump near8 map$ and horizon$ near8 map$ and radial and direction	0
☐	L11	shadow and bump near8 map and horizon$ near8 map and radial and direction	0
☐	L10	real-time and shadow and bump near8 map and horizon$ near8 map and radial and direction	0
☐	L9	real-time and shadow and bump near8 map and horizon$ near8 map and radial same direction	0
☐	L8	real-time same shadow same bump near8 map and horizon$ near8 map and radial same direction	0
☐	L7	L6 and shadow near6 map	0
☐	L6	l4 and horizon$ near10 map and (light or lit)	1
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☐	L5	L4 and bump near6 map and horizon$ near8 map and vector$	2
☐	L4	345/584.ccls.	34
		L1 and bump near6 map and surface and horizontal near6 map and texture	

☐	L3	same map$	1
☐	L2	L1 and bump near6 map and surface and horizontal near6 map and texture same map$ and color and (light or lit)and radial near6 direction and perspective same view and normal same vector	0
☐	L1	345/426.ccls.	511

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Day : Wednesday

Date: 7/21/2004
Time: 10:21:27

PALM INTRANET

Inventor Name Search Result

Your Search was:

Last Name = SLOAN
First Name = PETER-PIKE

Application#	Patent#	Status	Date Filed	Title	Inventor Name 14
60510301	Not Issued	020	10/10/2003	ROBUST SAMPLING OF PRECOMPUTED RADIANCE TRANSFER	SLOAN, PETER-PIKE J.
60510191	Not Issued	020	10/10/2003	ALL-FREQUENCY RELIGHTING USING SPHERICAL HARMONICS AND POINT LIGHT DISTRIBUTIONS	SLOAN, PETER-PIKE J.
60366920	Not Issued	159	03/21/2002	GRAPHICS IMAGE RENDERING WITH RADIANCE SELF-TRANSFER FOR LOW-FREQUENCY LIGHTING ENVIRONMENTS	SLOAN, PETER-PIKE
10815141	Not Issued	020	03/31/2004	SYSTEMS AND METHODS FOR ROBUST SAMPLING FOR REAL-TIME RELIGHTING OF OBJECTS IN NATURAL LIGHTING ENVIRONMENTS	SLOAN, PETER-PIKE JOHANNES
10815140	Not Issued	020	03/31/2004	SYSTEMS AND METHODS FOR ALL-FREQUENCY RELIGHTING USING SPHERICAL HARMONICS AND POINT LIGHT DISTRIBUTIONS	SLOAN, PETER-PIKE JOHANNES
10692361	Not Issued	030	10/22/2003	HARDWARE-ACCELERATED COMPUTATION OF RADIANCE TRANSFER COEFFICIENTS IN COMPUTER GRAPHICS	SLOAN, PETER-PIKE J.
10687098	Not Issued	020	10/15/2003	BI-SCALE RADIANCE TRANSFER	SLOAN, PETER-PIKE J.
10641472	Not Issued	030	08/15/2003	CLUSTERED PRINCIPAL COMPONENTS FOR PRECOMPUTED RADIANCE	SLOAN, PETER-PIKE

				TRANSFER	
10389553	Not Issued	030	03/14/2003	GRAPHICS IMAGE RENDERING WITH RADIANCE SELF-TRANSFER FOR LOW-FREQUENCY LIGHTING ENVIRONMENTS	SLOAN, PETER-PIKE J.
10170751	Not Issued	071	06/13/2002	INTERPOLATION USING RADIAL BASIS FUNCTIONS WITH APPLICATION TO INVERSE KINEMATICS	SLOAN, PETER-PIKE J.
09892924	Not Issued	030	06/26/2001	INTERACTIVE HORIZON MAPPING	SLOAN, PETER-PIKE
09705419	6642924	150	11/02/2000	METHOD AND SYSTEM FOR OBTAINING VISUAL INFORMATION FROM AN IMAGE SEQUENCE USING VISUAL TUNNEL ANALYSIS	SLOAN, PETER-PIKE J.
09627147	Not Issued	061	07/21/2000	SHAPE AND ANIMATION METHODS AND SYSTEMS USING EXAMPLES	SLOAN, PETER-PIKE J.
08386642	Not Issued	161	02/10/1995	REAL-TIME IMAGE GENERATION SYSTEM FOR SIMULATING PHYSICAL PAINT, DRAWING MEDIA, AND FEATURE MODELING WITH 3-D GRAPHICS	SLOAN , PETER-PIKE J.

Inventor Search Completed: No Records to Display.

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Day : Wednesday

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Date: 7/21/2004
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Inventor Name Search Result

Your Search was:

Last Name = COHEN
First Name = MICHAEL

Application#	Patent#	Status	Date Filed	Title	Inventor Name 51
60561713	Not Issued	020	04/13/2004	ADAPTABLE IN-WALL NETWORKED DEVICE	COHEN, MICHAEL S.
60550127	Not Issued	020	03/04/2004	NETWORK INFORMATION MANAGEMENT SYSTEM	COHEN, MICHAEL S.
60547681	Not Issued	020	02/25/2004	6-SUBSTITUTED 2,3,4,5-TETRAHYDRO-1H-BENZO[D] AZEPINES AS 5-HT2C RECEPTOR AGONISTS	COHEN, MICHAEL
60502780	Not Issued	020	09/12/2003	SUBSTITUTED 2-CARBONYLAMINO-6-PIPERIDINAMINOPYRIDINES AND SUBSTITUTED 1-CARBONYLAMINO-3-PIPERIDINAMINOBENZENES AS 5-HT1F AGONISTS	COHEN, MICHAEL PHILIP
60339849	Not Issued	159	12/11/2001	SELF-WATERING PLANTER	COHEN, MICHAEL
60279928	Not Issued	159	03/29/2001	N-(2-ARYLETHYL) BENZYLAMINES AS ANTAGONISTS OF THE 5-HT6 RECEPTOR	COHEN, MICHAEL PHILIP
60235410	Not Issued	159	09/21/2000	COMPUTER-ANIMATED MODEL OF MOVING ARTICULATORS AND SUPPLEMENTARY DISPLAYS IN SPEECH PRODUCTION	COHEN, MICHAEL M.
60206876	Not Issued	159	05/24/2000	PRICING EXERCISE EQUIPMENT ACCORDING TO USAGE	COHEN, MICHAEL ALVAREZ
60206841	Not Issued	159	05/24/2000	CUSTOM CONTENT DELIVERY FOR NETWORKED EXERCISE EQUIPMENT	COHEN, MICHAEL ALVAREZ
60206835	Not	159	05/24/2000	RELIABILITY SYSTEM FOR	COHEN,

	Issued			NETWORKED EXERCISE EQUIPMENT	MICHAEL ALVAREZ
60188603	Not Issued	159	03/09/2000	RAPID MODELING OF ANIMATED FACES FROM VIDEO	COHEN, MICHAEL F.
29195835	Not Issued	020	12/17/2003	BARRIER MOVEMENT OPERATOR HOUSING	COHEN, MICHAEL AARON
29195834	Not Issued	020	12/17/2003	BARRIER MOVEMENT OPERATOR HOUSING	COHEN, MICHAEL AARON
10846302	Not Issued	020	05/14/2004	RAPID COMPUTER MODELING OF FACES FOR ANIMATION	COHEN, MICHAEL F.
10846254	Not Issued	019	05/14/2004	DATA ENTRY SYSTEM FOR AN ENDOSCOPIC EXAMINATION	COHEN, MICHAEL
10846245	Not Issued	019	05/14/2004	SYSTEM AND METHOD FOR MANAGING AN ENDOSCOPIC LAB	COHEN, MICHAEL
10846102	Not Issued	020	05/14/2004	RAPID COMPUTER MODELING OF FACES FOR ANIMATION	COHEN, MICHAEL F.
10846086	Not Issued	020	05/14/2004	RAPID COMPUTER MODELING OF FACES FOR ANIMATION	COHEN, MICHAEL F.
10836778	Not Issued	020	04/30/2004	SYSTEMS AND METHODS FOR NOVEL REAL-TIME AUDIO-VISUAL COMMUNICATION AND DATA COLLABORATION	COHEN, MICHAEL F.
10814851	Not Issued	019	03/31/2004	STYLIZATION OF VIDEO	COHEN, MICHAEL
10812754	Not Issued	020	03/29/2004	CARICATURE EXAGGERATION	COHEN, MICHAEL
10801451	Not Issued	020	03/15/2004	PROVIDING NOTIFICATIONS FOR DOMAIN REGISTRATION CHANGES	COHEN, MICHAEL A.
10796736	Not Issued	020	03/08/2004	SYSTEM AND METHOD FOR IMAGE AND VIDEO SEGMENTATION BY ANISOTROPIC KERNEL MEAN SHIFT	COHEN, MICHAEL
10781490	Not Issued	051	02/17/2004	CAPACITOR	COHEN, MICHAEL
10723836	Not Issued	030	11/25/2003	LOAD BEARING SYSTEM WITH SECURE POUCH ATTACHMENT	COHEN, MICHAEL
10697907	Not Issued	030	10/29/2003	METHOD AND APPARATUS FOR CREATING AND	COHEN, MICHAEL

				EVALUATING STRATEGIES	RAYMOND
10685377	Not Issued	030	10/13/2003	MODULAR ARMORED VEHICLE SYSTEM	COHEN, MICHAEL
10633776	Not Issued	030	08/04/2003	SYSTEM AND METHOD FOR IMAGE EDITING USING AN IMAGE STACK	COHEN, MICHAEL
10618443	Not Issued	020	07/11/2003	METHODS, COMPOSITIONS AND APPARATUSES FOR DETECTING A TARGET IN A PRESERVATIVE SOLUTION	COHENFORD, MICHAEL
10480877	Not Issued	020	12/12/2003	NOVEL ARTICLE OF CLOTHING	COHEN, MICHAEL P
10472741	Not Issued	020	02/27/2004	N-(2-ARYLETHYL) BENZYLAMINES AS ANTAGONISTS OF THE 5-HT6 RECEPTOR	COHEN, MICHAEL PHILIP
10010003	6497966	150	12/06/2001	LAMINATED ARMOR	COHEN, MICHAEL
09960248	Not Issued	030	09/20/2001	VISUAL DISPLAY METHODS FOR IN COMPUTER-ANIMATED SPEECH PRODUCTION MODELS	COHEN, MICHAEL M.
09934717	Not Issued	071	08/22/2001	SYSTEM AND METHOD TO PROVIDE A SPECTATOR EXPERIENCE FOR NETWORKED GAMING	COHEN, MICHAEL F.
09924745	6575075	150	08/07/2001	COMPOSITE ARMOR PANEL	COHEN, MICHAEL
09892924	Not Issued	030	06/26/2001	INTERACTIVE HORIZON MAPPING	COHEN, MICHAEL F.
09866324	Not Issued	041	05/24/2001	PRICING EXERCISE EQUIPMENT ACCORDING TO USAGE	COHEN, MICHAEL ALVAREZ
09866155	Not Issued	041	05/24/2001	INCENTIVE AWARDS FOR USE OF EXERCISE EQUIPMENT	COHEN, MICHAEL ALVAREZ
09866154	Not Issued	093	05/24/2001	INTERFACE FOR CONTROLLING AND ACCESSING INFORMATION ON AN EXERCISE DEVICE	COHEN, MICHAEL ALVAREZ
09841619	6624106	150	04/23/2001	ALUMINA CERAMIC PRODUCTS	COHEN, MICHAEL
09757336	6512096	150	01/09/2001	PROSTATE CELL SURFACE ANTIGEN-SPECIFIC ANTIGEN-SPECIFIC ANTIBODIES	COHEN, MICHAEL B.

09714395	Not Issued	161	11/16/2000	METHOD AND KIT FOR AFFIXING A PROSTHETIC COMPONENT TO A BONE	COHEN, MICHAEL
09685642	Not Issued	041	10/10/2000	PAY PER USE DIGITAL PHOTOGRAPHY	COHEN, MICHAEL S.
09673013	6408734	150	10/06/2000	COMPOSITE ARMOR PANEL	COHEN, MICHAEL
09621882	Not Issued	161	07/22/2000	PRESSURIZABLE ARTICULABLE RETRACTOR	COHEN, MICHAEL JON
09547921	6477595	150	04/11/2000	A SCALABLE DSL ACCESS MULTIPLEXER WITH HIGH RELIABILITY	COHEN, MICHAEL S.
09547911	6404861	150	04/11/2000	DSL MODEM WITH MANAGEMENT CAPABILITY	COHEN, MICHAEL S.
09547910	Not Issued	161	04/11/2000	COMMUNICATION SYSTEM FOR TRANSPORTING MULTIMEDIA INFORMATION OVER HIGH-SPEED LINKS USING AN ETHERNET TYPE NETWORK INTERFACE	COHEN, MICHAEL S.
09547419	Not Issued	161	04/11/2000	ETHERNET EDGE SWITCH FOR CELL-BASED NETWORKS	COHEN, MICHAEL S.
09488698	6488156	150	01/20/2000	METHOD AND SYSTEM FOR VERIFICATION OF FERTILIZATION OF POULTRY EGGS	COHEN, MICHAEL
09368750	6462742	150	08/05/1999	SYSTEM AND METHOD FOR MULTI-DIMENSIONAL MOTION INTERPOLATION USING VERBS AND ADVERBS	COHEN, MICHAEL F.

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Terms used
light and **vector** and **direction** and **radial bump mapping** and **horizon mapping**

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1 Session 3: light: Matrix radiance transfer

Jaakko Lehtinen, Jan Kautz

April 2003 **Proceedings of the 2003 symposium on Interactive 3D graphics**

Full text available: pdf(8.07 MB) Additional Information: full citation, abstract, references, index terms

Precomputed Radiance Transfer allows interactive rendering of objects illuminated by low-frequency environment maps, including self-shadowing and interreflections. The expensive integration of incident lighting is partially precomputed and stored as matrices.Incorporating anisotropic, glossy BRDFs into precomputed radiance transfer has been previously shown to be possible, but none of the previous methods offer real-time performance. We propose a new method, *matrix radiance transfer*, whic ...

Keywords: orthogonal projection, reflectance & shading models, shading, spherical harmonics

2 Cloth and filtering: Visualization of woven cloth

Neeharika Adabala, Nadia Magnenat-Thalmann, Guangzheng Fei

June 2003 **Proceedings of the 14th Eurographics workshop on Rendering**

Full text available: pdf(25.83 MB) Additional Information: full citation, abstract, references, index terms

A technique for visualizing clothes is proposed that can handle rendering of complex weave patterns. An industrial standard of weave representation is used to derive the weave pattern and a detailed model of light interaction with the pattern is developed. The proposed visualization technique supports viewing of cloth at various levels of detail, and provides a solution for rendering both back and front surfaces of cloth. The technique works for a wide variation in colors of threads, ranging fro ...

3 Texture mapping 3D models of real-world scenes

Frederick M. Weinhaus, Venkat Devarajan

December 1997 **ACM Computing Surveys (CSUR)**, Volume 29 Issue 4

Full text available: pdf(1.98 MB) Additional Information: full citation, abstract, references, index terms, review

Texture mapping has become a popular tool in the computer graphics industry in the last few years because it is an easy way to achieve a high degree of realism in computer-generated imagery with very little effort. Over the last decade, texture-mapping techniques

have advanced to the point where it is possible to generate real-time perspective simulations of real-world areas by texture mapping every object surface with texture from photographic images of these real-world areas. The techniqu ...

Keywords: anti-aliasing, height field, homogeneous coordinates, image perspective transformation, image warping, multiresolution data, perspective projection, polygons, ray tracing, real-time scene generation, rectification, registration, texture mapping, visual simulators, voxels

4 A physically-based night sky model

Henrik Wann Jensen, Frédo Durand, Julie Dorsey, Michael M. Stark, Peter Shirley, Simon Premože

August 2001 **Proceedings of the 28th annual conference on Computer graphics and interactive techniques**

Full text available: pdf(3.78 MB) Additional Information: full citation, abstract, references, citings, index terms

This paper presents a physically-based model of the night sky for realistic image synthesis. We model both the direct appearance of the night sky and the illumination coming from the Moon, the stars, the zodiacal light, and the atmosphere. To accurately predict the appearance of night scenes we use physically-based astronomical data, both for position and radiometry. The Moon is simulated as a geometric model illuminated by the Sun, using recently measured elevation and albedo maps, as well a ...

5 Frequency space environment map rendering

Ravi Ramamoorthi, Pat Hanrahan

July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: pdf(3.37 MB) Additional Information: full citation, abstract, references, citings, index terms

We present a new method for real-time rendering of objects with complex isotropic BRDFs under distant natural illumination, as specified by an environment map. Our approach is based on spherical frequency space analysis and includes three main contributions. Firstly, we are able to theoretically analyze required sampling rates and resolutions, which have traditionally been determined in an ad-hoc manner. We also introduce a new compact representation, which we call a *spherical harmonic reflec ...*

***Keywords**: complexity analysis, environment maps, image-based rendering, signal-processing, spherical harmonics*

6 Reflection from layered surfaces due to subsurface scattering

Pat Hanrahan, Wolfgang Krueger

September 1993 **Proceedings of the 20th annual conference on Computer graphics and interactive techniques**

Full text available: pdf(707.86 KB) Additional Information: full citation, references, citings, index terms

Keywords: Monte Carlo, integral equations, reflection models

7 Shading and shadows: Fast, arbitrary BRDF shading for low-frequency lighting using spherical harmonics

Jan Kautz, Peter-Pike Sloan, John Snyder

July 2002 **Proceedings of the 13th Eurographics workshop on Rendering**

Full text available: pdf(3.93 MB) Additional Information: full citation, abstract, references, citings, index terms

Real-time shading using general (e.g., anisotropic) BRDFs has so far been limited to a few point or directional light sources. We extend such shading to smooth, area lighting using a low-order spherical harmonic basis for the lighting environment. We represent the 4D product function of BRDF times the cosine factor (dot product of the incident lighting and surface normal vectors) as a 2D table of spherical harmonic coefficients. Each table entry represents, for a single view direction, the integ ...

8 Hardware: Hardware accelerated real time charcoal rendering

Aditi Majumder, M. Gopi

June 2002 **Proceedings of the 2nd international symposium on Non-photorealistic animation and rendering**

Full text available: pdf(15.59 MB) Additional Information: full citation, abstract, references, index terms

In this paper, we present simple rendering techniques implemented using traditional graphics hardware to achieve the effects of charcoal drawing. The effects include characteristics of charcoal drawings like broad grainy strokes and smooth tonal variations that are achieved by smudging the charcoal by hand. Further, we also generate the *closure effect* that is used by artists at times to avoid hard silhouette edges. All these effects are achieved using *contrast enhancement operators* ...

Keywords: charcoal rendering, hardware accelerated rendering, non photorealistic rendering, real time rendering

9 Heads, faces, hair: Head shop: generating animated head models with anatomical structure

Kolja Kähler, Jörg Haber, Hitoshi Yamauchi, Hans-Peter Seidel

July 2002 **Proceedings of the 2002 ACM SIGGRAPH/Eurographics symposium on Computer animation**

Full text available: pdf(9.67 MB) Additional Information: full citation, abstract, references, citings, index terms

We present a versatile construction and deformation method for head models with anatomical structure, suitable for real-time physics-based facial animation. The model is equipped with landmark data on skin and skull, which allows us to deform the head in anthropometrically meaningful ways. On any deformed model, the underlying muscle and bone structure is adapted as well, such that the model remains completely animatable using the same muscle contraction parameters. We employ this general techni ...

Keywords: biological modeling, deformations, facial animation, geometric modeling, morphing, physically based animation

10 Complex logarithmic mapping and the focus of expansion (abstract only)

Ramesh Jain

January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1

Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

Complex logarithmic mapping has been shown to be useful for the size, rotation, and projection invariance of objects in a visual field for an observer translating in the direction of its gaze. Assuming known translational motion of the observer, the ego-motion polar transform was successfully used in segmentation of dynamic scenes. By combining the two transforms one can exploit features of both transforms and remove some of the limitations

which restrict the applicability of both. In this paper ...

11 Computational Stereo
Stephen T. Barnard, Martin A. Fischler
December 1982 **ACM Computing Surveys (CSUR)**, Volume 14 Issue 4
Full text available: pdf(1.85 MB) Additional Information: full citation, references, citings, index terms

12 Phong normal interpolation revisited
C. W. A. M. van Overveld, B. Wyvill
October 1997 **ACM Transactions on Graphics (TOG)**, Volume 16 Issue 4
Full text available: pdf(453.16 KB) Additional Information: full citation, abstract, references, citings, index terms, review

Phong shading is one of the best known, and at the same time simplest techniques to arrive at realistic images whem rendering 3D geometric models. However, despite (or maybe due to) its success and its widespread use, some aspects remain to be clarified with respect to its validity and robustness. This might be caused by the fact that the Phong method is based on geometric arguments, illumination models, and clever heuristics. In this article we address some of the fundamentals that underli ...

Keywords: comptuer graphics, geometric modeling, rendering, shading

13 Anisotropic reflection models
James T. Kajiya
July 1985 **ACM SIGGRAPH Computer Graphics , Proceedings of the 12th annual conference on Computer graphics and interactive techniques**, Volume 19 Issue 3
Full text available: pdf(1.65 MB) Additional Information: full citation, abstract, references, citings, index terms

We present a new set of lighting models derived from the questions of electromagnetism. These models describe the reflection and refraction of light from surfaces which exhibit anisotropy---surfaces with preferred directions. The model allows a new mapping technique, which we call *frame mapping*. We also discuss the general relationship between geometric models, surface mapping of all types, and lighting models in the context of rendering images with extreme complexity.

Keywords: computer graphics, frame mapping, lighting models, raster graphics, surface mapping, texture mapping

14 Tracking three dimensional moving light displays (abstract only)
Michael Jenkin
January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1
Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

A method is presented for tracking the three-dimensional motion of points from their changing two-dimensional perspective images as viewed by a nonconvergent binocular vision system. The algorithm relies on a general smoothness assumption to guide the tracking process, and application of the tracking algorithm to a three-dimensional moving light display based on Cutting's Walker program as well as other domains are discussed.Evidence is presented relating the tracking algorithm to certain belief ...

15 Dynamic view-dependent partitioning for structured grids with complex boundaries for

object-order rendering techniques
Lance C. Burton, Raghu Machiraju, Donna S. Reese
October 1999 **Proceedings of the 1999 IEEE symposium on Parallel visualization and graphics**
Full text available: pdf(568.95 KB) Additional Information: full citation, abstract, references, index terms

Object-order rendering techniques present an attractive approach to run-time visualization of structured grid data, particularly when combined with a parallel rendering paradigm such as image composition. The ability of this combination to exploit hardware exceeds that of parallel image order methods. However, certain configurations of grid boundaries prevent composition from being performed correctly. In particular, when the boundary between two partitions contains concave sections ...

16 On the estimation of dense displacement vector fields from image sequences (abstract only)
H. H. Nagel
January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1
Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

Based on recent experimental as well as theoretical investigations, a generalization of previously published approaches towards the estimation of displacement vector fields is formulated. The calculus of variation allows to transform this approach into a set of two partial differential equations for the two components of the displacement vector field. Some simplifying assumptions facilitate the derivation of an iterative solution approach which can be studied in closed form.

17 Determining 3-D motion parameters of a rigid body: a vector-geometrical approach (abstract only)
B. L. Yen, T. S. Huang
January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1
Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

A vector-geometrical approach is given for the determination of 3-D motion parameters of a rigid body from point correspondences over 2 time sequential images. The resulting algorithms are similar to existing methods. However, the geometrical interpretations provide much valuable insight into the nature of the problem and the uniqueness question.

18 Reconstructing curved surfaces from specular reflection patterns using spline surface fitting of normals
Mark A. Halstead, Brain A. Barsky, Stanley A. Klein, Robert B. Mandell
August 1996 **Proceedings of the 23rd annual conference on Computer graphics and interactive techniques**
Full text available: pdf(511.46 KB) Additional Information: full citation, references, citings, index terms

Keywords: corneal modeling, normal fitting, photogrammetry, surface reconstruction, videokeratography

19 Determining the instantaneous axis of translation from optic flow generated by arbitrary sensor motion (abstract only)
J. H. Rieger, D. T. Lawton
January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1
Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

This paper develops a simple and robust procedure for determining the instantaneous axis of translation from image sequences induced by unconstrained sensor motion. The procedure is based upon the fact that difference vectors at discontinuities in optic flow fields generated by sensor motion relative to a stationary environment are oriented along translational field lines. This is developed into a procedure consisting of three steps: 1) locally computing difference vectors from an optic flow fie ...

20 A multiple track animator system for motion synchronization (abstract only)

D. Fortin, J. F. Lamy, D. Thalmann

January 1984 **ACM SIGGRAPH Computer Graphics**, Volume 18 Issue 1

Full text available: pdf(3.92 MB) Additional Information: full citation, abstract

MUTAN (MUltiple Track ANimator) is an interactive system for independently animating three-dimensional graphical objects. MUTAN can synchronize different motions; it is also a good tool for synchronizing motion with sound, music, light or smell. To indicate moments in time, marks are associated with appropriate frame numbers. MUTAN enables the marks to be manipulated. An animator can also adjust one motion without modifying the others. To make this possible, MUTAN handles several tracks at a tim ...

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1 View-dependent displacement mapping
Lifeng Wang, Xi Wang, Xin Tong, Stephen Lin, Shimin Hu, Baining Guo, Heung-Yeung Shum
July 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 3
Full text available: pdf(8.18 MB) Additional Information: full citation, abstract, references, index terms

Significant visual effects arise from surface mesostructure, such as fine-scale shadowing, occlusion and silhouettes. To efficiently render its detailed appearance, we introduce a technique called view-dependent displacement mapping (VDM) that models surface displacements along the viewing direction. Unlike traditional displacement mapping, VDM allows for efficient rendering of self-shadows, occlusions and silhouettes without increasing the complexity of the underlying surface mesh. VDM is based ...

Keywords: displacement maps, hardware rendering, mesostructure, refiectance and shading models

2 Smooth transitions between bump rendering algorithms
Barry G. Becker, Nelson L. Max
September 1993 **Proceedings of the 20th annual conference on Computer graphics and interactive techniques**
Full text available: pdf(563.15 KB) Additional Information: full citation, references, citings, index terms

Keywords: BRDF, animation, bump map, displacement map, rendering, surface detail, volume texture

3 Real-time bump map synthesis
Jan Kautz, Wolfgang Heidrich, Hans-Peter Seidel
August 2001 **Proceedings of the ACM SIGGRAPH/EUROGRAPHICS workshop on Graphics hardware**
Full text available: pdf(764.07 KB) Additional Information: full citation, abstract, references, index terms

In this paper we present a method that automatically synthesizes bump maps at arbitrary levels of detail in real-time. The only input data we require is a normal density function; the bump map is generated according to that function. It is also used to shade the generated

bump map.

The technique allows to infinitely zoom into the surface, because more (consistent) detail can be created on the fly. The shading of such a surface is consistent when displayed at different distances to the ...

4 Steerable illumination textures

Michael Ashikhmin, Peter Shirley

January 2002 **ACM Transactions on Graphics (TOG)**, Volume 21 Issue 1

Full text available: pdf(4.52 MB) Additional Information: full citation, abstract, references, citings, index terms

We introduce a new set of illumination basis functions designed for lighting bumpy surfaces. This lighting includes shadowing and interreflection. To create an image with a new light direction, only a linear combination of precomputed textures is required. This is possible by using a carefully selected set of steerable basis functions. Steerable basis lights have the property that they allow lights to move continuously without jarring visual artifacts. The new basis lights are shown to produce i ...

Keywords: Bump mapping, displacement mapping, relighting, steerable functions, textures

5 Precomputed radiance transfer for real-time rendering in dynamic, low-frequency lighting environments

Peter-Pike Sloan, Jan Kautz, John Snyder

July 2002 **ACM Transactions on Graphics (TOG) , Proceedings of the 29th annual conference on Computer graphics and interactive techniques**, Volume 21 Issue 3

Full text available: pdf(5.37 MB) Additional Information: full citation, abstract, references, citings, index terms

We present a new, real-time method for rendering diffuse and glossy objects in low-frequency lighting environments that captures soft shadows, interreflections, and caustics. As a preprocess, a novel global transport simulator creates functions over the object's surface representing transfer of arbitrary, low-frequency incident lighting into *transferred radiance* which includes global effects like shadows and interreflections from the object onto itself. At run-time, these transfer functio ...

Keywords: Monte Carlo techniques, graphics hardware, illumination, rendering, shadow algorithms

6 Session 3: light: Matrix radiance transfer

Jaakko Lehtinen, Jan Kautz

April 2003 **Proceedings of the 2003 symposium on Interactive 3D graphics**

Full text available: pdf(8.07 MB) Additional Information: full citation, abstract, references, index terms

Precomputed Radiance Transfer allows interactive rendering of objects illuminated by low-frequency environment maps, including self-shadowing and interreflections. The expensive integration of incident lighting is partially precomputed and stored as matrices.Incorporating anisotropic, glossy BRDFs into precomputed radiance transfer has been previously shown to be possible, but none of the previous methods offer real-time performance. We propose a new method, *matrix radiance transfer*, whic ...

Keywords: orthogonal projection, reflectance & shading models, shading, spherical harmonics

7 Cloth and filtering: Visualization of woven cloth

Neeharika Adabala, Nadia Magnenat-Thalmann, Guangzheng Fei
June 2003 **Proceedings of the 14th Eurographics workshop on Rendering**

Full text available: pdf(25.83 MB) Additional Information: full citation, abstract, references, index terms

A technique for visualizing clothes is proposed that can handle rendering of complex weave patterns. An industrial standard of weave representation is used to derive the weave pattern and a detailed model of light interaction with the pattern is developed. The proposed visualization technique supports viewing of cloth at various levels of detail, and provides a solution for rendering both back and front surfaces of cloth. The technique works for a wide variation in colors of threads, ranging fro ...

8 Session 8: miscellaneous topics: Pattern based procedural textures

Sylvain Lefebvre, Fabrice Neyret
April 2003 **Proceedings of the 2003 symposium on Interactive 3D graphics**

Full text available: pdf(21.44 MB) Additional Information: full citation, abstract, references

Numerous real-time applications such computer games or flight simulators require non-repetitive high-resolution texturing on large landscapes. We propose an algorithm which procedurally determines the texture value at any surface location by aperiodically combining provided patterns according to user-defined controls such as a probability distribution (possibly non stationary). Our algorithm can be implemented on programmable hardware by taking advantage of the texture indirection ability of rec ...

Keywords: graphics hardware, landscape, proceduralism, textures

9 Image-based modeling and photo editing

Byong Mok Oh, Max Chen, Julie Dorsey, Frédo Durand
August 2001 **Proceedings of the 28th annual conference on Computer graphics and interactive techniques**

Full text available: pdf(4.01 MB) Additional Information: full citation, abstract, references, citings, index terms

We present an image-based modeling and editing system that takes a single photo as input. We represent a scene as a layered collection of depth images, where each pixel encodes both color and depth. Starting from an input image, we employ a suite of user-assisted techniques, based on a painting metaphor, to assign depths and extract layers. We introduce two specific editing operations. The first, a "clone brushing tool," permits the distortion-free copying of parts of a picture, b ...

10 Real-time fur over arbitrary surfaces

Jerome Lengyel, Emil Praun, Adam Finkelstein, Hugues Hoppe
March 2001 **Proceedings of the 2001 symposium on Interactive 3D graphics**

Full text available: pdf(5.68 MB) Additional Information: full citation, references, citings, index terms

Keywords: hair rendering, lapped textures, volume textures

11 Reflection from layered surfaces due to subsurface scattering

Pat Hanrahan, Wolfgang Krueger
September 1993 **Proceedings of the 20th annual conference on Computer graphics and interactive techniques**

Full text available: pdf(707.86 KB) Additional Information: full citation, references, citings, index terms

Keywords: Monte Carlo, integral equations, reflection models

12 Dynamic view-dependent partitioning for structured grids with complex boundaries for object-order rendering techniques

Lance C. Burton, Raghu Machiraju, Donna S. Reese

October 1999 **Proceedings of the 1999 IEEE symposium on Parallel visualization and graphics**

Full text available: pdf(568.95 KB) Additional Information: full citation, abstract, references, index terms

Object-order rendering techniques present an attractive approach to run-time visualization of structured grid data, particularly when combined with a parallel rendering paradigm such as image composition. The ability of this combination to exploit hardware exceeds that of parallel image order methods. However, certain configurations of grid boundaries prevent composition from being performed correctly. In particular, when the boundary between two partitions contains concave sections ...

13 Making graphics physically tangible

J. Kenneth Salisbury

August 1999 **Communications of the ACM**, Volume 42 Issue 8

Full text available: pdf(499.75 KB) html(30.46 KB) Additional Information: full citation, references, citings, index terms

14 Special issue on independent components analysis: A generative model for separating illumination and reflectance from images

Inna Stainvas, David Lowe

December 2003 **The Journal of Machine Learning Research**, Volume 4

Full text available: pdf(764.42 KB) Additional Information: full citation, abstract, index terms

It is well known that even slight changes in nonuniform illumination lead to a large image variability and are crucial for many visual tasks. This paper presents a new ICA related probabilistic model where the number of sources exceeds the number of sensors to perform an image segmentation and illumination removal, simultaneously. We model illumination and reflectance in log space by a generalized autoregressive process and Hidden Gaussian Markov random field, respectively.The model ability to d ...

15 Sequencing Jobs with Stochastic Task Structures on a Single Machine

John L. Bruno

October 1976 **Journal of the ACM (JACM)**, Volume 23 Issue 4

Full text available: pdf(585.01 KB) Additional Information: full citation, abstract, references, index terms

A sequencing problem wherein there is a single processor and a finite number of jobs needing service is considered. Each job consists of a sequence of tasks generated probabilistically by a finite state Markov chain. Each state in the Markov chain is identified with a task and has a service-time requirement and a deferral cost, both of which are random variables. The goal is to minimize the expected value of the sum of the weighted finishing times of all the tasks. The sequencing discipline ...

16 Virtual environments at work: ongoing use of MUDs in the workplace

Elizabeth F. Churchill, Sara Bly

March 1999 **ACM SIGSOFT Software Engineering Notes , Proceedings of the international joint conference on Work activities coordination and collaboration**, Volume 24 Issue 2

Full text available: pdf(1.39 MB) Additional Information: full citation, abstract, references, citings, index terms

In recent years much attention has been paid to network-based, distributed environments like text-based MUDs and MOOs for supporting collaborative work. Such environments offer a shared virtual world in which interactions can take place irrespective of the actual physical proximity or distance of interactants. Although these environments have proven successful within social, recreational and educational domains, few data have been reported concerning use of such systems in the workplace. In this ...

Keywords: MUDs, collaboration, computer mediated communication, coordination, distributed teams, informal conversations, interviews

17 How DENDRAL was conceived and born

J. Lederberg

December 1987 **Proceedings of ACM conference on History of medical informatics**

Full text available: pdf(1.75 MB) Additional Information: full citation, abstract, references, index terms

As agreed with your organizers, this will be a somewhat personal history. They have given me permission to recall how I came to work with Ed Feigenbaum on DENDRAL, an exemplar of expert systems and of modeling problem-solving behavior. My recollections are based on a modest effort of historiography, but not a definitive survey of and search for all relevant documents. On the other hand, they will give more of the flow of ideas and events as they happened than is customary in published paper ...

18 People at leisure: social mixed reality: Lessons from the lighthouse: collaboration in a shared mixed reality system

Barry Brown, Ian MacColl, Matthew Chalmers, Areti Galani, Cliff Randell, Anthony Steed

April 2003 **Proceedings of the conference on Human factors in computing systems**

Full text available: pdf(1.26 MB) Additional Information: full citation, abstract, references, index terms

Museums attract increasing numbers of online visitors along with their conventional physical visitors. This paper presents a study of a mixed reality system that allows web, virtual reality and physical visitors to share a museum visit together in real time. Our system allows visitors to share their location and orientation, communicate over a voice channel, and jointly navigate around a shared information space. Results from a study of 34 users of the system show that visiting with the system w ...

Keywords: WWW, context-awareness, location-awareness, mixed reality, museum visiting, virtual reality

19 Graphics: Pick a Card...Any Card

Matt Matthews

October 2000 **Linux Journal**

Full text available: html(16.99 KB) Additional Information: full citation, abstract, references, index terms

With graphics capabilities being so important and new cards appearing all the time, you need a scorecard to pick the right one. Here it is ...

20 Simulating population and employment change for U.S. metropolitan and rural areas

Peter M. Allaman

December 1978 **Proceedings of the 10th conference on Winter simulation - Volume 2**

Full text available: pdf(878.74 KB) Additional Information: full citation, abstract, references, index terms

This paper reports on a computer simulation model of migration and employment change in 315 areas which together constitute the contiguous United States. In the process of constructing this model, an extensive database of 1960 and 1970 social and economic data was assembled at the county level from the Census of Population and Housing and procedures were developed for aggregating these data to more meaningful functional groupings of counties. This provided measures of levels of activities i ...

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